CONSCIOUSNESS

A Four-Day Unit Lesson Plan for High School Psychology Teachers

AMERICAN PSYCHOLOGICAL ASSOCIATION
TOPSS
TEACHERS OF PSYCHOLOGY IN SECONDARY SCHOOLS

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Developed and Produced by the Teachers of Psychology in Secondary Schools (TOPSS) of the American Psychological Association, May 2016

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This unit is aligned to the following content and performance standards of the *National Standards for High School Psychology Curricula* (APA, 2011).

CONTENT AND PERFORMANCE STANDARDS	SUPPORTING DOCUMENTS AND ACTIVITIES
CONTENT STANDARD 1: **The relationship between conscious and unconscious processes** Students are able to: (Performance Standards): 1.1 Identify states of consciousness 1.2 Distinguish between processing that is conscious (i.e., explicit) and other processing that happens without conscious awareness (i.e., implicit)	Lesson 1: Content Outline Activity 1: Warm-Up Critical thinking exercises A–E
CONTENT STANDARD 2: **Characteristics of sleep and theories that explain why we sleep and dream** Students are able to: (Performance Standards): 2.1 Describe the circadian rhythm and its relation to sleep 2.2 Describe the sleep cycle 2.3 Compare theories about the functions of sleep 2.4 Describe types of sleep disorders 2.5 Compare theories about the functions of dreams	Lesson 2: Content Outline Activity 2.1: Warm-Up Activity 2.2: Dream Descriptions Critical thinking exercises A–D
CONTENT STANDARD 3: **Categories of psychoactive drugs and their effects** Students are able to (Performance Standards): 3.1 Characterize the major categories of psychoactive drugs and their effects 3.2 Describe how psychoactive drugs act at the synaptic level 3.3 Evaluate the biological and psychological effects of psychoactive drugs 3.4 Explain how culture and expectations influence the use and experience of drugs	Lesson 3: Content Outline Activity 3.1: Warm-Up Activity 3.2: EYESCUBE: An Addiction Simulation Activity 3.3: Public Service Announcement (PSA) Activity 3.4: Mouse Party— Drugs and Neurotransmitters Critical thinking exercises A–E
CONTENT STANDARD 4: **Other states of consciousness** Students are able to (Performance Standards): 4.1 Describe meditation and relaxation and their effects 4.2 Describe hypnosis and controversies surrounding its nature and use 4.3 Describe flow states	Lesson 4 Content Outline Activity 4.1: Warm-Up Activity 4.2: Yoga or Meditation Exercise Activity 4.3: Self-Talk Critical Thinking Exercises A–F
PROPOSED NUMBER OF DAYS/HOURS FOR LESSON: Recommended number of teaching hours: **4*** **5** days in 50-minute classes = **4** hours **3** days in 90-minute classes = **4** hours *See Introduction.	

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PROCEDURAL TIMELINE

LESSON 1: CONSCIOUSNESS

Activity 1: Warm-Up

LESSON 2: SLEEPING AND DREAMING

Activity 2.1: Warm-Up

Activity 2.2: Dream Descriptions

LESSON 3: DRUGS THAT ALTER CONSCIOUSNESS

Activity 3.1: Warm-Up

Activity 3.2: EYESCUBE: An Addiction Simulation

Activity 3.3: Public Service Announcement (PSA)

Activity 3.4: Mouse Party: Drugs and Neurotransmitters

LESSON 4: OTHER STATES OF CONSCIOUSNESS

Activity 4.1: Warm-Up

Activity 4.2: Yoga or Meditation Exercise

Activity 4.3: Self-Talk

INTRODUCTION

The activities for this lesson are to be taken as recommendations. Many more than 4 hours of instructional activities have been included in this resource. As such, teachers are encouraged to be flexible in choosing which activities to use and which ones might be better left unused given time constraints. Additionally, teachers are encouraged to modify any suggested activity to make it fit well with the needs of the students.

For instance, a teacher might decide Lesson 1's Activity 1: Warm-Up would work well with their students and then move into a lecture-based activity without doing a critical thinking exercise. Similarly, a teacher might decide Activity 3.2 is quite beneficial, yet time consuming, and, thus, would forego a lecture-based activity.

Suggested activities are referenced within the lesson content outlines where appropriate, and all activities may be found together in a separate section after the content outlines. Additionally, a list of discussion questions, references, and resources are found at the end of the lesson plan.

The authors and the APA Committee of Teachers of Psychology in Secondary Schools thank Chris Jones-Cage, PhD, College of the Desert, and Shanan Valles, MA, El Paso Community College, for their reviews of this lesson plan. This project was supported by a grant from the American Psychological Foundation.

CONTENT OUTLINE

LESSON 1

Consciousness

In this lesson, students will be introduced to concepts related to consciousness. The lesson also includes some information on philosophical perspectives on the nature of the mind as well as a primer on altered states of consciousness related to hypnosis, meditation, and psychoactive drugs. The lesson ends with a consideration of explicit versus implicit cognitive processes.

GO TO ACTIVITY 1
Warm-Up

I. Consciousness

A. Consciousness: An awareness of both internal and external stimuli

B. History of the study of consciousness

1. Conscious experience was studied early on through a process of introspection.
2. As behaviorism and its focus on directly observable phenomena took hold, less emphasis was placed on the study of consciousness.
3. Focus on consciousness re-emerges as a function of the "cognitive revolution."

C. Philosophical considerations

1. **Mind-body problem:** What is the relationship between the physical brain (body) and the intangible mind and consciousness?

2. **Monism:** There are no distinctions between mind and body.

    a. **Materialism:** The mind is what the brain does.

    b. **Idealism:** All of reality is mentally constructed and therefore immaterial.

3. **Dualism:** The mind and brain are not one and the same.

    a. **Interactionism:** Mind and brain interact in causal ways.

    b. **Emergent materialism:** The mind emerges from the brain, but it cannot be reduced to brain activity. In other words, the mind is more than the sum of the different activities of the brain.

II. Levels of consciousness

A. States and altered states of consciousness

1. **Wakefulness** is a state of consciousness characterized by high levels of awareness, behavior, and thought.

2. **Sleep** is a state of consciousness characterized by lower levels of physical activity and sensory awareness.

3. A **preconscious** state is when mental events are outside of current conscious awareness but can be brought into consciousness voluntarily (i.e., remembering).

4. A **nonconscious** state is when mental processing occurs outside conscious awareness (e.g., controlling heart rate, respiration, and temperature).

5. An **unconscious** state is the lack of awareness (e.g., a state rendered by drug-induced anesthesia for medical procedures). Freud believed the unconscious served as a repository for sexual/aggressive urges via repression. Jung believed that the unconscious was a conduit to the collective unconscious, the repository of ancestral thought forms or archetypes.

6. Altered states of consciousness

    a. **Hypnosis** is the state of self-focus in which little attention is given to external stimuli.

    b. **Meditation** is focusing on a single target (e.g., breathing) to increase awareness, achieve a sense of peace and tranquility and/or being “in the moment” (see Lesson 4).

    c. **Psychoactive drugs** are chemical substances that act upon the central nervous system and are associated with changes in perception, mood, and behavior.

B. Levels of cognitive processing as related to consciousness

1. **Explicit cognitive processes** are mental activities of which we are consciously aware.

2. **Implicit cognitive processes** are mental activities for which we have no conscious awareness. However, we may be influenced by these mental activities (e.g., blindsight: People cannot see, but can avoid objects in their visual field; or automatic processing: People drive home while thinking about other things.).

    a. **Priming** is a term used to describe how exposure to a stimulus influences responses to other stimuli. This is true even if there is no conscious awareness of the prime.

    b. **Mere exposure** refers to how people prefer stimuli they have been previously exposed to, even if they’re not consciously aware of that exposure.

    c. **Implicit associations** are associations that may affect our behavior and/or attitudes (e.g., prejudice).

Critical thinking exercises

A. Students can write an essay on an instance when a person walked into a room and forgot why. Students can interview others about this phenomenon, research it online, or use another investigative method. Students should reference the states of consciousness in their response.

B. Students can write an essay on something they like (i.e., food, music, a crush) and investigate the processes of how they started liking that thing. Did they have a choice? Can they now consciously not like it?

C. In a classroom demonstration or at home, students can listen to a relaxation, meditation, or hypnosis CD or watch a video. Students will then write up their experiences. Did a change of consciousness take place?

D. Students can investigate, in a manner the teacher deems appropriate, subliminal advertising.

E. Students can investigate, analyze, and hypothesize whether the teaching methods in schools should incorporate unconscious processing.

LESSON 2

Sleeping and Dreaming

In this lesson, students are introduced to the broad concept of circadian rhythms and the stages of the sleep cycle. The lesson also considers the potential functions of sleep and dreaming. The lesson closes with a discussion of disordered sleep.

GO TO ACTIVITY 2.1
Warm-Up

I. Sleep and circadian rhythms

A. **Biological rhythms**

1. **Ultradian rhythms** are biological rhythms that take fewer than 24 hours to complete a full cycle (e.g., blood glucose levels).
2. **Infradian rhythms** are biological rhythms that take more than 24 hours to complete a full cycle (e.g., menstrual cycle).
3. **Circadian rhythms** are biological rhythms that require 24 hours to complete a full cycle (e.g., sleep-wake cycle).

B. **Biological clock**

All rhythms are controlled through a biological mechanism located in the suprachiasmatic nucleus of the hypothalamus. This "clock" uses cues such as levels of light to set or "entrain" itself to the external environment. We experience jet lag when our biological clocks don't match up with our external environments.

II. Sleep cycle

A. Stage 1 is the transitional phase between sleep and wakefulness characterized by decreased muscle tone and body temperature. EEG recordings from this stage are predominated by alpha waves early on followed by theta waves. Note that an American Academy of Sleep Medicine (AASM) task force reclassified this as "N1" (Non-REM).

B. Stage 2 involves deeper relaxation and continued theta wave activity. Sleep spindles and K-complexes are characteristic wave patterns (showing a diagram illustrating EEG recordings across stages of sleep would be helpful here) that appear in EEG recordings during this stage of sleep. The AASM reclassified this as "N2" sleep.

C. Stage 3 is the entry into slow-wave sleep characterized by the appearance of delta waves on an EEG. In 2007, the AASM combined Stages 3 and 4 sleep and reclassified the combination as "N3" sleep.

D. Stage 4 is the deepest stage of sleep with continued delta wave activity. As noted above, the AASM combined Stages 3 and 4 into "N3" sleep.

E. REM is the sleep stage during which most dreaming occurs. This stage is associated with rapid eye movement (hence the name) and paralysis of muscles in the body that are not essential for survival. EEG activity looks very similar to active wakefulness. The AASM reclassified this stage as "R" sleep.

III. Functions of sleep

A. Adverse effects of sleep deprivation: Failure to get sufficient sleep leads to lowered levels of alertness and is associated with increased risk of depression, obesity, diabetes, hypertension, stroke, cardiovascular disease, immune dysfunction, colorectal cancer, breast cancer, and even mortality (e.g., Abrams, 2015).

B. Benefits of sleep: Sufficient levels of sleep are not just beneficial in the sense that the adverse consequences of sleep deprivation are avoided. Rather, there is likely added value of sufficient sleep such as lowered stress levels, improved mood, memory consolidation, etc.

C. Theories of sleep: Our bodies regulate sleep in ways eating and drinking are regulated. This suggests sleep serves a critical function. Several theories have been proposed, but some have less empirical support than others (as discussed in Siegel, 2005).

    1. Sleep as an adaptive behavior: This argument suggests we may have evolved to sleep through the night as periods of inactivity would have protected us from danger such as accidents in the dark or being at risk of attack by predators.

2. Sleep as energy conservation: This theory suggests sleep allows for reduced energetic demands, which would surely be helpful in environments in which resources are limited.

3. Sleep as restoration: Sleep allows us to restore/repair the consequences of the activity associated with wakefulness.

4. Sleep and the brain: Sleep is associated with changes in brain structure and brain organization. This could involve the development of the brains of infants and young children and processes of learning and memory in adults.

IV. Dreams

A. Characteristics of dreams

1. A dream's duration can range from a few seconds to an hour.

2. Dreams are often organized in a logical, story-like manner.

3. A lucid dream is one during which the dreamer is aware she or he is dreaming and may be able to direct the progression of the dream.

B. Function of dreams: Like sleeping, dreaming seems to be a regulated process. Depriving an individual of REM sleep results in the person's having a "REM rebound." A REM rebound refers to a person's spending more time in REM sleep after periods of REM deprivation. This would suggest that REM sleep and dreaming play some important functions; and once again, several theories have been proposed.

1. Brain plasticity: Like sleep in general, there is some evidence that REM sleep is important for the restructuring and reorganizing of the brain that would be involved in normal development as well as in processes related to learning and memory.

2. Brainstem activation: Some marine mammals (e.g., dolphins) don't have much if any REM sleep because only half their brains sleep at a time. However, they do have continuous activity in the brainstem associated with their movements through the water. This has led some to suggest that REM may be a way for animals that have sleep in both hemispheres of the brain to maintain activity in the brainstem to maintain body temperature and circadian rhythms (as discussed in Siegel, 2005). Dreams might simply be an interpretation of this activity of the brainstem (Hobson & McCarley, 1977).

3. Dreams as problem-solving mechanisms: Dreams provide opportunities to explore and work through problems that we're dealing with at any given time in our life (see Nielsen, Kuiken, Alain, Stenstrom, & Powell, 2004).

4. Dreams as the "royal road" to the unconscious: Sigmund Freud believed dreams allowed insight into the inner workings of the unconscious mind. According to this view, dreams are wish fulfillment with the manifest (apparent) content of the dream serving as a censored version of the latent (hidden) content.

GO TO ACTIVITY 2.2
Dream Descriptions

V. Disordered patterns of sleep

A. Insomnia refers to difficulty in falling or remaining asleep.

1. Insomnia is the most common sleep disorder; it is often associated with feelings of fatigue.

2. Many potential factors contribute to insomnia, including age, diet, stress level, levels of physical activity, drug use, etc.

3. Treatment options include both psycho- and pharmacotherapy.

B. **Narcolepsy** is an irresistible urge to sleep and is often associated with **cataplexy** (lack of muscle tone or muscle weakness).

1. Narcoleptic episodes are much like REM sleep (e.g. cataplexy, dream-like hallucinations).

2. Narcoleptic episodes are often triggered during periods of heightened stress or emotional arousal.

3. A typical episode can range from a few minutes to half an hour.

4. Narcolepsy may be linked to genetic factors, abnormalities in the hypocretin neurotransmitter system, and/or dysfunction of the parts of the brain that regulate REM sleep (National Institute of Neurological Disorders and Stroke, n.d.).

5. Generally, treatment includes prescribed stimulant medications.

C. **Sleep apnea** is a disorder in which an individual periodically stops breathing during sleep and wakes to resume breathing. This can occur hundreds of times in a given night and results in daytime fatigue and exhaustion.

1. Sleep apnea is more common among men and obese people than others and is often associated with loud snoring.
2. The two types of sleep apnea are obstructive (airways are blocked) and central (disruptions in brain signals).
3. Causes include factors related to age, drug use, and the shape/size of the head, neck, and muscles.
4. Common treatments include weight loss and the use of a CPAP (continuous positive airway pressure) device during sleeping.

D. Parasomnias refers to disruptive motor activity or experience during sleep. These can occur during REM or non-REM sleep (National Sleep Foundation, n.d.; Provini, Tinuper, Bisulli, & Lagaresi, 2011).

1. **Night terrors** are the sense of panic during which sleepers may scream or try to protect themselves from an unseen danger. Night terrors usually occur during non-REM stages of sleep.
2. A **REM behavior disorder** is one in which the muscle paralysis normally associated with REM sleep does not occur. Therefore, sleepers may "act out" their dreams.
3. **Sleepwalking (somnambulism)** involves performing any number of behaviors, from walking to making a meal to driving a car, usually during Stage 3 or 4 (N3) of sleep. Sleepwalkers may appear awake with their eyes open while they engage in these tasks.
4. **Sudden infant death syndrome (SIDS)** is a disorder in which sleeping infants stop breathing and die. Infants younger than 1 year old are at the higher risk, and boys are more at risk than girls.
    a. SIDS is associated with a number of risk factors including premature birth, fever, and smoking.

b. It is recommended that members of the household refrain from smoking inside an infant's home and that infants be placed in the crib on their backs without wearing caps. Any blankets or pillows that might pose a suffocation risk should also be removed from the crib (Task Force on Sudden Infant Death Syndrome, 2011).

5. Others

a. **Bruxism** is the severe grinding of teeth during sleep.

b. **Nocturnal myoclonus** is involuntary muscle movement an individual experiences while asleep. It is often associated with restless leg syndrome, which involves uncomfortable sensations in the legs alleviated by movement. These sensations can occur during periods of wakefulness but are more common at the onset of sleep (as discussed in Ohayon & Roth, 2002).

c. **Nocturnal enuresis** (bed-wetting) is involuntary urination during sleep. This is common among young children and is generally not considered to be indicative of any underlying problem. If it occurs among adults, it can be a warning sign for more serious issues (e.g., various cancers, neurological disorders, diabetes, etc.) and should be evaluated by a physician (National Association for Continence, n.d.).

Critical thinking exercises

A. Students can investigate research difficulties and biases in studying sleep.

B. Students can explore the relationship between unconscious processes and phenomena such as sleepwalking (i.e., how and why sleepwalkers rarely move in a clumsy manner).

C. Students can investigate theories of dream interpretation and the efficacy of such interpretations.

D. Students can write an opinion regarding the guilt of people who commit crimes during their sleep.

LESSON 3

Drugs That Alter Consciousness

This lesson provides an overview of how drugs alter states of consciousness. The lesson includes introductory psychopharmacological concepts and a broad classification of various types of psychoactive drugs. Within each category, example drugs and their effects are discussed.

GO TO ACTIVITY 3.1
Warm-Up

GO TO ACTIVITY 3.2
EYESCUBE: An Addiction Simulation

I. Drugs and altered consciousness

A. **Psychoactive drugs** are drugs that affect brain processes and result in altered states of consciousness, mood, and perception.

1. To be psychoactive, the drug must be able to enter the bloodstream and cross the blood-brain barrier (a feature of the blood vessels in the brain that prevent most foreign substances from entering the brain).

2. Psychoactive drugs alter brain function by interacting with neurotransmitter systems.

    a. **Agonists** are drugs that mimic or facilitate the activity of a given neurotransmitter system.

    b. **Antagonists** are drugs that block or impede the activity of a given neurotransmitter system.

B. **Psychopharmacology** is the study of psychoactive drugs and their effects on behavior and mental and biological processes.

1. **Pharmacokinetics** is the study of what the body does to a drug. How is the drug absorbed, circulated, metabolized, and excreted from the body?

2. **Pharmacodynamics** is the study of what the drug does to the body. Which neurotransmitters are affected, what are the subjective and physiological effects, etc.?

C. Effects of the use of drugs

1. **Tolerance**: Increasingly larger doses are required to achieve the same effect.

2. **Sensitization**: Effects become more pronounced with the same dose of drug. Essentially, this is inverse tolerance.

3. **Withdrawal** refers to the symptoms associated with cessation of drug use. Symptoms of withdrawal are usually opposite the effects of the drug itself. For example, heroin has potent analgesic (pain-suppressing) properties. Withdrawal from heroin, therefore, involves a hypersensitivity to pain (hyperalgesia).

4. **Physiological dependence** is generally characterized by both tolerance to and withdrawal from a drug.

5. **Psychological dependence** refers to continued drug use despite adverse consequences or in order to maintain a sense of well-being. The psychologically dependent individual will become exceedingly preoccupied with obtaining the drug if it is no longer available.

6. **Addiction** is often viewed as a disease process with strong genetic influences. Over the course of an addicted person's drug use, the person's brain function and structure become impaired, resulting in the person's compulsive patterns of use. (For a recent review, please see Volkow & Morales, 2015.)

7. Both **learning and expectancy** can dramatically affect the drug user's experience as can be demonstrated with phenomena such as conditioned tolerance/withdrawal, contingent tolerance, and the placebo effect.

8. **Culture** also plays a role in the patterns of both the use of a drug and the drug's effects. For example, it's quite common in Finland for people to engage in punctuated episodes of binge drinking separated by periods of sobriety. In France, on the other hand, it is much more common to drink the same amount of alcohol every day without ever being intoxicated (as described in McKim & Hancock, 2013). Even the placebo effect can be influenced by cultural factors. For instance, it has been shown that Colombian patients show greater improvement for both antidepressant medications and placebo treatments compared to Americans (as discussed in Smith, Lin, & Mendoza, 1993).

II. Drug categories (All the following material is drawn from Julien, Advokat, & Comaty, 2008; and McKim & Hancock, 2013.)

A. **Depressants** reduce the activity of the central nervous system generally by facilitating (agonizing) gamma-amino-butyric acid (GABA) neurotransmission.

1. **Alcohol** is a "messy" drug, meaning it has effects on many different neurotransmitter systems, and its behavioral and cognitive effects are wide ranging. It is known to be a positive allosteric modulator, meaning alcohol doesn't activate the GABA receptor directly, rather alcohol allows GABA to bind more efficiently with the GABA receptor.

    a. Blood alcohol concentration (BAC) of 0.08% is considered the threshold of legal intoxication in the United States; lethal dose is associated with BACs of 0.4-0.5%.

    b. Around a BAC of 0.08%, users experience mild excitement and declines in motor and cognitive performance. As BAC increases, impairments become more pronounced. Eventually, users may feel nauseated (BAC around 0.15%), may lose consciousness (BAC 0.2-0.3%), and may even die as respiratory centers of the brain become suppressed (BAC 0.4-0.5%).

    c. Acute alcohol use can disrupt memory and attention, and chronic alcohol use is associated with severe memory problems (e.g. Wernicke-Korsakoff syndrome).

    d. A high potential exists for physical/psychological dependence, with genetic factors playing a significant role in susceptibility to alcohol dependence/abuse.

    e. Withdrawal is quite severe, and in some cases, lethal.

2. **Barbiturates**, drugs sometimes referred to as sedative-hypnotics, result in relaxation, mild euphoria, and decreased alertness. Examples of barbiturates include phenobarbital (Nembutal), amobarbital sodium (Amytal Sodium), and butabarbital sodium (Butisol).

    a. Like alcohol, potential for dependence is high, and high doses can lead to death due to respiratory depression.

    b. Withdrawal can be severe and potentially lethal.

c. Cross-tolerance occurs between alcohol and the barbiturates.

d. At low doses, barbiturates act as positive allosteric modulators of the GABA receptor (see alcohol). However, at higher doses, barbiturates can directly activate the GABA receptor, which can lead to lethal suppression of respiratory centers of the brain.

3. **Benzodiazepenes** are also known as **anxiolytics** because of their ability to induce relaxation and ease anxiety. Examples of benzodiazepines include alprazolam (Xanax), diazepam (Valium), and lorazepam (Ativan).

a. Benzodiazepines act as positive allosteric modulators of the GABA receptor.

b. They are generally considered safer than barbiturates and have largely replaced barbiturates as both sleeping aids and in the treatment of anxiety. This is because benzodiazepenes cannot directly activate the GABA receptor regardless of dose.

c. Considerable issues, physical (and in some cases psychological) dependence and withdrawal, still exist with the use of benzodiazepines.

B. **Stimulants** are drugs that increase behavioral and mental activity.

1. **Caffeine** reduces drowsiness and enhances problem-solving and physical abilities. It also has diuretic properties. At high doses, it can result in tremors and anxiety.

a. Quite possibly the world's most used drug, caffeine is found in coffee, tea, chocolate, soft drinks, and many medications.

b. Caffeine acts as an adenosine antagonist. Adenosine is a neuromodulator associated with reduced neural activity.

c. The most common symptoms of withdrawal from caffeine are headache and fatigue.

2. **Nicotine** use is associated with elevated mood and cognitive function. Nicotine also serves as an appetite suppressant.

a. The primary psychoactive agent of tobacco, nicotine is an acetylcholine agonist.

b. Tobacco use is a major risk for various cancers, cardiovascular disease, and respiratory disorders.

c. Nicotine withdrawal causes anxiety, irritability, and severe craving.

3. **Cocaine** is a potent psychomotor stimulant associated with a sense of euphoria.

   a. Cocaine blocks the reuptake of dopamine.

   b. High doses can lead to schizophrenic-like episodes that include visual and tactile hallucinations and delusions of paranoia and/or grandeur.

   c. People using both cocaine and alcohol simultaneously are at a significantly higher risk of overdose.

4. **Amphetamine** has effects similar to those of cocaine.

   a. Like cocaine, amphetamine blocks the dopamine transporter. However, it also reverses the transporter so that additional dopamine is released into the synapse.

   b. Amphetamine also causes significant increases in norepinephrine.

   c. Amphetamines generally have a longer half-life than cocaine. This means it takes longer for the body to break down and eliminate amphetamines.

   d. Amphetamines are medications used to treat disorders like ADHD and narcolepsy and are increasingly used for recreational purposes.

5. **Cathinones and synthetic cathinones** have the analogues of amphetamine with similar effects.

   a. Bath salts contain a mixture of synthetic cathinones that result in euphoria at low doses, but the same aversive reactions to amphetamine occur at higher doses.

   b. As new synthetic cathinones are produced, they become available as legal alternatives to illicit drugs. However, many of the compounds that have been synthesized are now also illegal.

C. **Opiates** relieve pain and result in euphoria and relaxation. Opiates interact with opioid receptors in the brain (the endorphin neurotransmitter system).

1. **Opium** is a pain reliever that causes a sense of well-being.
    a. It is derived from the poppy plant.
    b. Opium has a high potential for physical and psychological dependence.
2. **Morphine** is a pain reliever that causes a sense of euphoria.
    a. It is derived from opium.
    b. Morphine has a high potential for physical/psychological dependence.
3. **Heroin** relieves pain and causes a sense of euphoria.
    a. It is derived from morphine but is more powerful.
    b. Heroin has a high potential for physical/psychological dependence.
4. **Narcotic painkillers** include drugs such as Vicodin, OxyContin (oxycodone), and methadone. An increase in the prescribing of painkillers has led to an increase in prescription overdoses (see CDC, 2014).

D. **Hallucinogens** are drugs that significantly alter perception, thought, and mood.

1. **Lysergic acid diethylamide** (**LSD**) leads to hallucinations that are sometimes synesthetic in nature. Synesthesia refers to a blending of senses, so someone may hear a flash of light or see a sound.
    a. LSD is a serotonin agonist.
    b. There is a low potential for physical/psychological dependence.
2. **Methylenedioxymethamphetamine** (**MDMA** or "**Ecstasy**") has stimulant-like effects but is often considered a hallucinogen because of its ability to profoundly alter social perception.
    a. MDMA is a serotonin agonist.
    b. Users report a pronounced sense of connection with others and an increase in energy; MDMA is a popular drug in the club party scene.

c. Because of increased activity, users can easily become overheated and dehydrated, increasing the risk of heart attack and/or heat stroke.

d. Excessive use can result in long-term damage to serotonin neurons of the brain, which could lead to long-term problems with sleep, mood, and anxiety. Long-term use is also associated with memory and attention problems.

3. The effects of **phencyclidine** (**PCP** or "**angel dust**") vary widely as a function of dose and individual differences. Some users might experience a sense of euphoria, while others have negative reactions to the drug. Use of PCP can result in reactions that are similar to symptoms of schizophrenia.

   a. Hallucinations are often associated with distortions of body size (e.g., users think their arms are incredibly long or short).

   b. PCP is an antagonist of the NMDA glutamate receptor and is therefore associated with amnesia.

4. **Peyote** is a cactus that contains the hallucinogen mescaline, which is similar to LSD. Some in the Native American Church use it in sweat lodges for religious purposes as a means of purification (Halpern, Sherwood, Hudson, Yurgelun-Todd, & Pope, 2005).

E. **Marijuana** is associated with a sense of well-being, relaxation, and appetite.

1. **Tetrahydrocannabinol** (**THC**) is the primary psychoactive ingredient and acts as an agonist for the endocannabinoid neurotransmitter system.

2. Marijuana originates from the hemp plant (Cannabis sativa).

3. Marijuana use is associated with mild memory impairment and distortions in time perception.

4. Research on potential of dependence is mixed.

5. Recently, the potential for marijuana's medicinal benefits has generated interest.

6. Some synthetic cannabinoids have been marketed as legal alternatives to marijuana (e.g. “Spice” or “K2”). However, research suggests that these synthetic molecules have higher potential for toxic reactions and more pronounced psychotic-like behaviors than the naturally occurring cannabinoids found in marijuana (Pierre, 2011).

GO TO ACTIVITY 3.3

Public Service Announcement (PSA)

GO TO ACTIVITY 3.4

Mouse Party: Drugs and Neurotransmitters

Critical thinking exercises

A. Students can write an essay investigating the placebo effect and consciousness-altering drugs.

B. Students can create a graphic organizer that will help them organize the types of consciousness-altering drugs.

C. Students can investigate and examine what type of consciousness-altering drugs are most abused and why.

D. Students can investigate in an essay or other medium the dissonance between the high-achievement culture and the use and abuse of consciousness-altering drugs.

E. Students can research articles that contain statistically significant results of consciousness-altering drugs on health and performance.

LESSON 4

Other States of Consciousness

This lesson gives students additional information on changes in consciousness related to meditation and hypnosis. The lesson includes interesting historical information on the use of hypnosis through time. It closes with a discussion of flow states.

GO TO ACTIVITY 4.1
Warm-Up

I. Meditation and relaxation techniques

A. **Meditation** refers to any number of techniques rooted in Asian and Buddhist cultures the purpose of which is to achieve an altered state of consciousness marked by feelings of peace and tranquility. A person may achieve this altered state by focusing their attention onto a single reference point, which could be a word, an object, or a bodily sensation.

B. **Relaxation** is the act of attempting to relax either through specific exercises or through some sort of imagery.

C. Physiological effects of these techniques include lowered respiration rate, heart rate, blood pressure, and muscle tension.

D. Mindful meditation has the potential to treat issues ranging from insomnia to mood/anxiety disorders to chronic pain to recovery from drug addiction and abuse (as discussed in Grossman, Niemann, Schmidt, & Walach, 2004; Jain et al., 2007; Witkiewitz, Marlatt, & Walker, 2005).

E. Although many effects of meditation are also achieved with relaxation exercises, meditation may have the added benefit of reducing rumination (overthinking or obsessing over stressful situations), which would be helpful for people dealing with anxiety- and/or mood-related issues (Jain et al., 2007).

F. The exact mechanisms by which meditation occurs are not well understood, but recent advances in functional imaging suggest the involvement of a number of midline brain structures, the insular cortex, and the amygdala (as discussed in Marchand, 2014).

GO TO ACTIVITY 4.2

Yoga or Meditation Exercise

II. Hypnosis (This information is drawn from Myers, 2013 unless otherwise noted.)

A. **Hypnosis** is the use of relaxation to achieve an altered state of consciousness in which an individual is more likely to respond to suggestions that alter perceptions and thoughts.

B. History of hypnosis

1. Anton Mesmer (1734-1815) was an Austrian physician who originated "mesmerism," a treatment he thought relied on "animal magnetism." As a treatment, Mesmer moved magnets over the bodies of people suffering from various ailments. Some of these people would enter a trancelike state while he did this and upon awakening report that they felt better. There was no empirical support for mesmerism, which came to be viewed with some degree of skepticism.

2. Clark Hull (1884-1952) was an American psychologist interested in the concept of suggestibility. He established a laboratory to investigate hypnosis and demonstrated that hypnotic phenomena could be observed in a laboratory setting. In 1933, he published the highly regarded book *Hypnosis and Suggestibility: An Experimental Approach* (Beach, 1959).

C. Hypnosis and suggestibility

1. A person's openness to suggestion is critical in determining how susceptible that person is to hypnosis.

2. An estimated 20% of people are highly hypnotizable. These people often have rich fantasy lives and can easily become engrossed in imaginary events.

3. People led to expect to be hypnotized are more likely to be hypnotized.

D. What is and is not possible with hypnosis

1. Some evidence suggests hypnosis can be used therapeutically for a variety of issues (e.g., pain management) with people who are especially open to the power of suggestion. However, the degree to which hypnosis produces effects is unclear.

2. Hypnosis cannot make a person act against their will.

3. Hypnosis cannot enhance memory (although relaxed reflection might), and many memories "recovered" during hypnosis are unreliable. Hypnosis does nothing to change the normal processes associated with memory encoding, storage, and retrieval.

E. Controversy

1. Since Mesmer's time, hypnosis has been viewed with some degree of skepticism, exacerbated by outrageous claims made by entertainers claiming to be hypnotists.

2. There is controversy about whether hypnosis represents an altered state of consciousness. Some claim there is nothing special about a hypnotic state and people get caught up in playing a hypnotized role (social influence theory). Others argue hypnosis is a special state of split consciousness (divided consciousness theory).

3. There is empirical evidence that brain functionality and activity are altered in hypnotic states. In addition, some evidence shows structural differences in people as a function of the degree of their hypnotizability (discussed in Vanhaudenhuyse, Laureys, Faymonville, 2013).

GO TO ACTIVITY 4.3
Self-Talk

III. Flow state

Flow state is a state of consciousness in which an individual becomes completely engaged with a task. This is often marked by reduced self-awareness and passage of time. Flow state, which reflects optimal levels of task engagement and performance, is studied in the field of positive psychology (as described in Csikszentmihalyi, 1999; Myers, 2013; Payne, Jackson, Noh, & Stine-Morrow, 2011).

A. Flow state is described colloquially as being "in the zone."

B. People in a flow state appear to be driven by intrinsic motivational factors.

C. Flow states boost self-esteem, self-efficacy, and well-being.

Critical thinking exercises

A. Students can compare and contrast hypnosis with meditation and other relaxation techniques.

B. Students can investigate whether on-stage hypnosis is “real.”

C. Students can compare and contrast portrayals of hypnosis in popular media with what they have learned in class.

D. By themselves or with a classmate (or family member where appropriate) students can measure their pulse, then engage in an appropriate relaxation exercise such as three deep breaths, then re-measure their pulse.

E. Students can, in an essay, hypothesize how a regimen of hypnosis, meditation, or progressive muscle relaxation might benefit them or might benefit high school students in general.

F. Students can write a short essay on flow states, describing what a flow state is and when it is likely to occur, describing a time when they or someone they know has experienced one.

ACTIVITIES

ACTIVITY 1

Warm-Up

Developed by
Joseph Swope, PhD
Northwest High School, Germantown, MD

BACK TO CONTENT OUTLINE

Concept
This activity demonstrates how opinions and feelings are formed below consciousness.

Instructions
The teacher distributes two descriptions of a substitute teacher and two false surveys that ask students their thoughts on their impression of the teacher; half the class should receive one description/survey and the other half receive the other. The descriptions are identical, except for one word. In one description, one adjective that describes the make-believe substitute teacher is the word “cold.” The other includes the word “warm.” After reading the description, students fill out the survey. Teachers can show that despite the fact, few students consciously noticed the adjectives warm and cold; their survey results exaggerated their unconscious perceptions of a make-believe substitute teacher.

Teachers should feel comfortable and encouraged to change the wording and the application of this activity to better fit the school culture and expectations of their students regarding substitute teachers.

If time allows, a good idea might be to have a debriefing session. A discussion could be fostered on deception, ethics, and other aspects of research that pertain to this activity.

Further Reading

Kelley, H. H. (1950). The warm-cold variable in first impressions of people. *Journal of Personality, 18,* 431-439

SUBSTITUTE TEACHER SURVEY

In an effort to foster an internal locus of control among students, I would like your input on a potential substitute for this class. Later in the semester, I will be out of town for a few days. I am currently looking into how I can keep instruction going for the class rather than simply give you busy work. The person I have in mind is a college professor who is quite an expert in experimental psychology. She is thinking about moving from college instruction to high school instruction. In college at the end of every semester, professors are required to collect teaching evaluations from their students. Here are the top words that her students used to describe her: "intelligent," "skillful," "industrious," "warm," "practical," and "cautious."

Please provide me with the following information so I can determine if she would be a good fit for this class.

1. How much do you think you will connect personally with this teacher over the time she is teaching?

1 2 3 4 5 6 7
Not at all Somewhat Very much

2. How easy do you think she'll be to understand?

1 2 3 4 5 6 7
Not at all Somewhat Very much

3. How patient do you think she will be if you do not understand?

1 2 3 4 5 6 7
Not at all Somewhat Very much

4. How much do you think you will learn from this teacher?

1 2 3 4 5 6 7
Not at all Somewhat Very much

5. How typical does she seem of most of the substitute teachers you have had?

1 2 3 4 5 6 7
Not at all Somewhat Very much

SUBSTITUTE TEACHER SURVEY

In an effort to foster an internal locus of control among students, I would like your input on a potential substitute for this class. Later in the semester, I will be out of town for a few days. I am currently looking into how I can keep instruction going for the class rather than simply give you busy work. The person I have in mind is a college professor who is quite an expert in experimental psychology. She is thinking about moving from college instruction to high school instruction. In college at the end of every semester, professors are required to collect teaching evaluations from their students. Here are the top words that her students used to describe her: "intelligent," "skillful," "industrious," "cold," "practical," and "cautious."

Please provide me with the following information so I can determine if she would be a good fit for this class.

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Not at all Somewhat Very much

5. How typical does she seem of most of the substitute teachers you have had?

1 2 3 4 5 6 7
Not at all Somewhat Very much

ACTIVITY 2.1

Warm-Up

Instructions

Have students write a short essay stating their personal theory of why we sleep and dream.

You can also ask students to take the Sleep Foundation's "Sleep IQ" quiz, available online at **https://sleepfoundation.org/quiz/sleep-iq-quiz**. Students should be instructed to review the solutions to the questions at the end of the quiz.

BACK TO CONTENT OUTLINE

ACTIVITY 2.2

Dream Descriptions

Developed by
Kathleen Gavura, MEd
Colonia High School, Colonia, NJ

Concept

Students are often fascinated by their dreams and the idea of dream interpretation. This exercise is intended to allow them to think critically about psychological theories of dreaming as they examine their own dreams.

Instructions

Students are to fill in the Dream Descriptions sheet (see next page) daily for a week prior to the class discussion on the theories of dreaming. In column one, they should describe any people, animals, or other central figures that appeared in the dream. In column two, they should describe a particular place that was evident in the dream, if they are able to recall a location. In the third column, they should describe the plot or manifest content of the dream in as much detail as possible. In the fourth column, they should list any moods or feelings the dream evoked.

BACK TO CONTENT OUTLINE

The objective of the activity is to allow students to apply three major theories of dreaming to their dreams, including the brainstem activation theory of Hobson and McCarley, the problem-solving approach to dreaming, and Freud's psychoanalytic theory as it pertains to the function of dreaming.

The first step in the application of the dream theories is to examine the purpose of dreams according to Sigmund Freud. Ask students to define the terms "latent content" and "manifest content" as they pertain to dreaming and discuss how Freud saw dreaming as a pathway to understanding the unconscious mind. Excerpts from Freud's *The Interpretation of Dreams* related to his discussion of particular dream symbols can be utilized as specific examples of the psychoanalytic approach to dream interpretation. Ask students to examine their dream content and see if they find Freud's explanations relevant to their dreams and whether they accept the interpretations he has offered. Good topics to discuss would be whether or not universal symbols should be applied to dreaming and whether or not dreams reveal aspects of an individual's unconscious desires.

Next, considering the brainstem activation explanation, do students feel their dreams conform to the theory that proposes that items appearing in dreams are random and have no coherent meaning? Is it necessary or relevant to bother interpreting dreams at all?

Last, students should think of issues and problems they are currently facing and decide whether or not these issues are being reflected in their dreams. Are dreams really a way of working out issues that are troubling the dreamer?

A class discussion should then determine which theory students found to be most useful in understanding their dreams and the strengths and weaknesses they found in the theories.

DREAM DESCRIPTIONS

Day	People	Places	Plot	Mood
Monday				
Tuesday				
Wednesday				
Thursday				
Friday				
Saturday				
Sunday				

ACTIVITY 3.1

Warm-Up

Instructions
Ask students to brainstorm factors that contribute to drug use among teenagers.

BACK TO CONTENT OUTLINE

ACTIVITY 3.2

EYESCUBE: An Addiction Simulation

Developed by
Rob McEntarffer, PhD
Lincoln, NE

From the original *TOPSS Unit Lesson Plan on States of Consciousness* and adapted from a lesson by Todd Campbell introduced at the Texas A&M Summer Psychology Institute, 1994

Concept

This activity allows students to simulate some of the physical, social, cognitive, and emotional experiences of a person who is actually addicted to a drug. Student participation should be voluntary with the understanding that participants may stop participating at any time (although they will not get the full benefit of the exercise unless they stick with it the entire time).

Preparation of class

To prevent students from trivializing the true experience of addiction, you may want to invite a recovering addict or drug counselor as a guest speaker to discuss their experience with addiction.

BACK TO CONTENT OUTLINE

Materials needed

EYESCUBE Instruction Sheet (see next page) for participants. Students provide the rest of the materials.

Instructions

Introduce the concept of the project carefully, making sure to have a serious discussion with the class about not trivializing the experiences of an addict. Hand out the instruction sheet and answer questions. Be explicit about starting and stopping times for the simulation. Two or three days is the suggested time frame. It helps if the instructor does the simulation along with the students. After the simulation is over, the instructor can create an “ice addicts anonymous” meeting in the classroom and discuss results. This activity can be expanded by having the students wear “tracks” on their arms (a piece of yarn) they must also keep hidden from others. *Note.* Inform other teachers and parents about the activity to explain unusual or suspicious behavior by these students.

Options for “addictive substance” other than ice

Gum, candy, nuts, and so on.

Optional follow-up activity

Read an article about the life of an actual addict and write a journal entry about the connections to your simulation.

EYESCUBE INSTRUCTION SHEET FOR PARTICIPANTS

- **Your drug of choice is ice. You used to be able to get your fix from just water, but now you’ve moved up to ice. Ice is socially unacceptable and illegal, so you will need to be careful in acquiring and using ice.**
- **Your thirst is your craving for ice. Any time you drink any liquid you will need ice in it. This applies to all drinking situations, including drinking fountains, cans or bottles, coffee, and late night drinks of water.**
- **Please document your addiction in a journal. Each day write about how you obtained ice and when and where you consumed it. Write about your thoughts on where you will get your next ice and what your plan is to stay hidden from others.**
- **Write about your experience at the end of your journal. What did you discover about addiction and withdrawal? What worked about the simulation and what didn’t?**

ACTIVITY 3.3

Public Service Announcement (PSA)

Developed by
Kathleen Gavura, MEd
Colonia High School, Colonia, NJ

Concept

To review the effects of psychoactive drugs, students should create and perform a public service announcement (PSA).

Instructions

Students in groups of three or four should select a category of drugs to describe. The description should include the physical and psychological effects of the drugs in the category. The emphasis of the PSA should be on explaining the effects of the drugs to their peers, including why teens are vulnerable to using them and how teens can seek help. The help suggestions can be general or specific to their school.

BACK TO CONTENT OUTLINE

The methods students use to create the PSA can include videos, animation, or live performances. They can direct other actors or perform themselves. Students within the groups often have different levels of experience with video software, artistic or dramatic ability, and creativity. They should play to their strengths and take advantage of each other's ability to contribute their talents.

The length of their PSAs should be about three minutes. Time should be given in class for planning the PSAs, but students should also exchange phone numbers and email addresses so they can communicate outside class and arrange meetings if necessary.

The rubric for the assignment (see next page) should include the accuracy and completeness of the material presented, creativity, and persuasiveness. Students can also be directed to examine the social psychological topics of attitude change and persuasion to learn techniques that would increase the effectiveness of their message. To avoid social loafing, each student should submit a statement as to what he or she contributed to the project. For their performance, students can show their class the PSA, put it on the school-wide television announcements, or perform it at a school assembly.

SAMPLE RUBRIC FOR PSA SUBSTANCE ABUSE

CRITERION	1	2	3
Accurate and complete	Information is inaccurate and incomplete, and PSA shows lack of effort.	Some information is omitted, and PSA is lacking flow.	Information on the drugs is correct; PSA is well developed and presented.
Persuasive	PSA has not used any persuasion techniques.	PSA uses few persuasion techniques.	PSA clearly uses several persuasion techniques.
Creative	PSA is dull and does not demonstrate creative thinking.	Some interesting ideas are included, but improvement in originality is needed.	PSA utilizes a variety of media, grabs attention, and sparks interest in the intended audience.

ACTIVITY 3.4

Mouse Party: Drugs and Neurotransmitters

Developed by
Virginia Welle, MS
Chippewa Falls Senior High School, Chippewa Falls, WI

Instructions

Instruct students to use the Mouse Party interactive website (**http://learn.genetics.utah.edu/content/addiction/mouse/**) from the University of Utah Genetic Science Learning Center to explore effects of each of the drugs listed in the chart provided. Then, have the students complete the table with this information:

- Identify which neurotransmitter is affected by the drug.
- Explain how the drug alters activity at the synapse.
- Identify the drug as an agonist/antagonist for that particular neurotransmitter.

BACK TO CONTENT OUTLINE

Name: _____

MOUSE PARTY: DRUGS AND NEUROTRANSMITTERS

Use the Mouse Party interactive from the University of Utah Genetic Science Learning Center to explore effects of each of the drugs listed below. Then, complete the table with this information:

- Identify which neurotransmitter is affected by the drug.
- Explain how the drug alters activity at the synapse.
- Identify the drug as an agonist/antagonist for that particular neurotransmitter.

DRUG	NEUROTRANSMITTER(S)	HOW DOES THE DRUG ALTER ACTIVITY AT THE SYNAPSE?	AGONIST OR ANTAGONIST
Alcohol			
Cocaine			
Methamphetamine			
LSD			
Marijuana			
Ecstasy			
Heroin			

MOUSE PARTY: DRUGS AND NEUROTRANSMITTERS—ANSWER KEY

DRUG	NEUROTRANSMITTER(S)	HOW DOES THE DRUG ALTER ACTIVITY AT THE SYNAPSE?	AGONIST OR ANTAGONIST
Alcohol	GABA	It makes GABA receptors even more inhibitory.	Agonist (for GABA)
	Glutamate	It binds to Glutamate receptors, preventing it from binding to the cell.	Antagonist (for Glutamate)
Cocaine	Dopamine	It blocks reuptake of dopamine.	Agonist
Methamphetamine	Dopamine	Methamphetamine is taken into axon by reuptake pumps ("transporters"). It invades vesicles and pushes dopamine molecules out into the synapse.	Agonist
LSD	Serotonin	It chemically resembles serotonin and binds to receptor sites.	Agonist (sometimes antagonist)
Marijuana	Dopamine	It blocks activity of inhibitory neurotransmitter, resulting in a flood of dopamine.	Agonist (for dopamine)
Ecstasy	Serotonin	Ecstasy mimics serotonin and is taken up by reuptake pumps. Transporters push excess serotonin into the synapse.	Agonist
Heroin	Dopamine	Heroin blocks inhibitory neurotransmitters, triggering release of dopamine.	Agonist

ACTIVITY 4.1

Warm-Up

Instructions

Students will hypothesize with a partner or in a short written response why relaxation is not taught in schools and if it should be.

BACK TO CONTENT OUTLINE

ACTIVITY 4.2

Yoga or Meditation Exercise

Developed by
Kathleen Gavura, MEd
Colonia High School, Colonia, NJ

Concept

To increase their familiarity with relaxing the conscious mind, you can introduce students to yoga or meditation. For yoga, you can invite an instructor from the community to conduct a sample class. If this is not possible, a DVD of an introductory yoga class can be used. The sample class can be taught in cooperation with the physical education department. You can ask for permission to use the gym either for the psychology students alone or with physical education students. It is always optimal to have a physical education instructor nearby when doing physical activities.

Instructions

Prep students for the activity by discussing the goals and techniques of yoga and watching videos of a class online. For the activity itself, whether presented by a yoga instructor or a DVD, students should dress in loose, comfortable clothing and bring a yoga mat they own or use one from the physical education department. The yoga instructor can conduct a typical class, staying with easier poses and emphasizing students should not go beyond their level of comfort; the same applies if a DVD is used in lieu of a yoga instructor. After the class, the students can debrief by discussing whether or not they enjoyed the class, how it felt physically, and whether or not they felt more relaxed after the class.

For meditation, the activity can be more long term. Prior to the exercise, have each student rate their perceived level of stress on a scale of 1 to 10, with 1 being calm and 10 being extremely tense. Students could also:

- Measure their resting pulse rate by counting the beats for 20 seconds and multiplying the result by 3,
- List their current stressors, and/or
- View an explanation of mindfulness and meditation on YouTube, such as that of Jon Kabat-Zinn, and learn a simple breathing technique.

BACK TO CONTENT OUTLINE

The goal of the exercise is to get students to focus solely on their breath for a few minutes. After practicing in class, they can re-measure their resting pulse rate and report on that rate and feelings of relaxation.

Next, have students attempt to practice the breathing technique for 5 minutes every day for a week. At the end of the week, hold a class discussion in which students relate how easy or difficult the activity was to do and whether or not the meditation had a positive impact on their level of perceived stress and physical response.

ACTIVITY 4.3

Self-Talk

Developed by
John Mohl, PhD, MEd
Cheltenham High School, Wyncote, PA

Concept

Both state and sociocognitive theorists acknowledge the power of suggestion and how it can affect both the behavior and subjective experiences of people, both in and out of hypnosis. This activity demonstrates the power of self-suggestion.

Instructions

Instruct students to stand up and then sit back down ("control condition"). Ask them to make a mental note on how easy it was for them to get out of their chairs, using a scale of 1 to 10, with 1 being the hardest and 10 being the easiest.

"Negative Self-Talk" Condition: Then tell them the following:

> You know how sometimes before a difficult test or project you tell yourselves "This is not worth it," "I am no good at this," or "I am going to fail this"? I want you to actually tell yourself those same things, but this time about getting out of your chair. Tell yourself quietly that you are unable to get out the chair. That it's hopeless. That you are terrible at getting out of your chair. Say to yourself with the same conviction those same mantras before a tough test or project.

Let them do this for about 10 seconds. Ask them again to get out of their chair. Then have them sit down. (*Note.* Some may actually be unable to get out of their chair.) Have them rate again on a scale of 1 to 10 how difficult it was for them to do that.

"Positive Self-Talk Condition": Then tell your students the following:

> Now tell yourselves that you can easily get out of your chair; that it is super easy; that you are proficient at getting out your chair. Tell yourself you are a virtuoso at it. Tell yourself nothing can stop you from doing it!

BACK TO CONTENT OUTLINE

Let them do this for about 10 seconds. Ask them again to get out of their chair and then sit down. Have them rate one last time on a scale of 1 to 10 how easy it was for them to stand up.

Some students will report that it was more difficult for them to get out of the chair, as indicated by a lower number compared to the original "control" when they gave negative self-talk. Some students will also report that it was even easier for them to get out the chairs compared to the "control" condition when giving positive self-talk. Time permitting, you might want to compare the quantitative data of the control, negative, and positive conditions.

Note. Some students will rate the control condition as a 10 but will find it easier to stand during the positive self-talk condition. This is a good opportunity to talk about the ceiling effect and how it can affect research data.

This can serve as a teachable moment: Negative self-talk can be quite destructive, while positive self-talk can be helpful. Émile Coué told his patients to start their day by saying "Every day and in every way I am getting better with remarkable results."

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DISCUSSION QUESTIONS

1. Why are teenagers more vulnerable to sleep deprivation? The lack of sleep has what effects on them physically? What risks can occur to affect their behavioral functioning? What suggestions can be made to improve sleep hygiene and encourage teens to get adequate sleep?
2. Cite evidence in support of each of the following theories on why we have dreams and the function of dreams: brain plasticity, brainstem activation, problem-solving, and psychoanalytical reasons. State weaknesses that affect the credibility of each of the theories.
3. Explain the changes in attitude toward meditation in the West. Describe three areas in the treatment of disease or disorders in which meditation has been proven effective. How can people use mediation in their daily lives to lessen the effects of stress?
4. Describe situations in which hypnosis has been misused, as in recovered memories.
5. Describe neurological, cognitive, and social implications of teenage substance use, focusing on one drug category. What are the particular risks that make teenagers vulnerable to drugs? Which treatment methods and outreach programs are most effective in reaching teens?

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RESOURCES

Websites

Alcohol, Tobacco, and Other Drug Databases, Hazeldon Betty Ford Foundation

The Hazeldon Betty Ford Foundation website offers databases of information focused on helping individuals, families, and communities struggling with addiction.

https://www.hazelden.org/web/public/usdatabaselibrary.page

APA Topics: Sleep

Millions of people do not get enough sleep, and many suffer from lack of sleep. APA's webpage on sleep discusses the importance of sleep and sleep problems in children and teens, plus how to get a good night's sleep.

http://www.apa.org/topics/sleep/index.aspx

Harvard Implicit Bias Test

Project Implicit investigates thoughts and feelings that exist outside of conscious awareness or conscious control. Visit the website to participate in tests and learn more about research on implicit biases.

https://implicit.harvard.edu/implicit/

Mouse Party

Mouse Party is designed to provide a glimpse into the chemical interactions at the synaptic level that cause the drug user to feel "high."

http://learn.genetics.utah.edu/content/addiction/mouse/

National Institute on Drug Abuse

The National Institute on Drug Abuse advances science on the causes and consequences of drug use and addiction. The website gives visitors tools of prevention and treatment and information as it relates to drug abuse and addiction.

http://www.drugabuse.gov/

Substance Abuse and Mental Health Services Administration (SAMHSA)

SAMHSA is the agency within the U.S. Department of Health and Human Services that leads public health efforts to advance the behavioral health of the nation. SAMHSA's mission is to reduce the impact of substance abuse and mental illness on America's communities through grants, data, advisory councils, programs and publications.

http://www.samhsa.gov/

Videos

Hart, C. [TEDMED Talk]. (2014). *Everything you think you know about drugs is wrong.* Retrieved from **http://tedmed.com/talks/show?id=309156**

Hari, J. [TED Global London]. (2015, June). *Everything you think you know about addiction is wrong.* Retrieved from **https://www.ted.com/talks/johann_hari_everything_you_think_you_know_about_addiction_is_wrong?language=en**

PBS. (2009, November 24). *NOVA: What are dreams?* Retrieved from **www.pbs.org/wgbh/nova/body/what-are-dreams.html**

Wolfson, A. (2013, May 7). *Adolescent sleep.* Retrieved from **https://www.youtube.com/watch?v=cb6n_N4qO9U&list=PLxf85IzktYW-JH0behJ-ZQeZnsUQGzvFFf&index=17**

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